

***WATERSHED and WATERWAY MANAGEMENT PLAN***  
***FOR***  
***TOWN OF AMESBURY, MASSACHUSETTS***

By

Amesbury Department of Public Works

And

In Cooperation with

The Amesbury Lakes & Waterways Commission

Version 2.3 (Revised November 2016)

Version 2.2 (Revised July 2010)

Version 2.1 (Permit revision May 5, 1999)

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## 1.0 PURPOSE AND AUTHORITY

This document is intended to be a formal policy for the operation and management of the watershed, lakes, rivers and water control structures located within the Town of Amesbury. This policy will supersede any and all policies the Town currently uses, written or unwritten. The purpose of this management plan is to protect the public safety, to insure an adequate supply of water to meet the needs of the Amesbury Water Treatment Plant (WTP), to protect wetlands resources, to maximize water quality, to minimize the impact of seasonal water level fluctuations on abutting properties, and to preserve historical recreational uses in the watershed. This plan focuses on waterways tributary to the Town's drinking water intake, continues along the primary waterways, and terminates at the confluence with the Merrimack River.

Authority to implement procedures recommended in this management plan is granted through the Amesbury Conservation Commission, since the majority of watersheds and waterways are located within jurisdiction of the Massachusetts Wetlands Protection Act and the Amesbury Wetlands Bylaws. By the Commission issuing an Order of Conditions and accepting the contents of this plan, it allows for the legal authority to proceed with the recommendations contained herein. A current Order of Conditions shall be maintained at all times. Following the three year duration of the Order of Conditions, it shall be renewed (every year) for continued implementation of the unchanged management plan. Should revisions be necessary, then the Conservation Commission shall decide whether a new Order of Conditions is necessary.

## 2.0 DEFINITIONS

The following is a list of definitions used throughout this document.

***Acre-feet:*** Is the volumetric measurement of water for every 12-inch depth, per acre.

***Conservation Commission:*** A municipal board with the mission to enforce State and local wetlands protection laws.

***Dam:*** Typically an earthen embankment with outlet structures used to impound water.

***Department of Environmental Protection:*** The regulatory agency for the Commonwealth of Massachusetts responsible for enforcement of State Environmental general laws.

***Impoundment:*** A body of water created by a dam and sometimes referred to as reservoir, lake or pond.

***Million Gallons per Day (MGD):*** The measurement of water flow in gallons within one day.

***Spillway:*** A structure typically part of a dam which allows water flow from the impoundment.

***Watershed:*** The land area having tributary drainage to a surface water body.

***Water Treatment Plant (WTP):*** A facility that processes raw water and provides clean water sufficient for human consumption.

***Weir:*** Adjustable structure used to impede and control the flow of water of an impoundment.

### **3.0 WATERSHED ORGANIZATION**

The Town of Amesbury is comprised of five (5) water districts as delineated in the figure provided in the Appendix. The districts roughly coincide with the natural features of the various watersheds in the Town rather than any political districts.

***District 1*** contains the area tributary to drinking water intake for the Town. The district contains Lake Attitash, Meadowbrook Pond, Tuxbury Pond and a portion of Powow River. The district is located in western Amesbury and terminates at the Newton Road dam where water is taken for the public water supply.

***District 2*** is downstream of the drinking water supply but remains part of Powow River watershed. The district contains Lake Gardner and the Great Marsh and is located in central Amesbury.

***District 3*** is a tributary watershed to the Powow River. This district contains a few streams which lead to Clark's Pond and eventually, the Powow River. This is a rural area located in northeast portion of Amesbury.

***District 4*** contains the urban portion of the town with the Powow River making its final journey to the confluence with the Merrimack River.

***District 5*** is in southern Amesbury and abuts the Merrimack River. This area is also very rural and contains minor water bodies of concern.

## **4.0 TIMELINES**

This document is a work in progress. The document will need to be updated as structures are repaired or altered, as well as when operational, hydraulic or environmental data becomes available. As it stands, this document is to be used as a framework from which changes can be made. The information below pertains to all structures as they exist at the time of the update to this document.

## **5.0 SITE DESCRIPTION**

The following paragraphs briefly describe each of the significant waterways in Town. There are many other smaller streams and ponds which are not covered by this management plan (including but not limited to Clarks Pond, Bailey Pond, and Pattens Pond). An inability to manage these water ways and lesser flow volume, are the reasons for not including them. Where height features are described in elevation, the National Geodetic Vertical Datum of 1929 (NGVD29) was used.

### **5.1 Upper Powow River**

The upper Powow Rivers flows for approximately 6,000 linear feet, with an average width of 40 feet, a mean depth of 6 feet and a total volume of 33 acre-feet. The Powow River has a watershed of over 50 square miles. The upper Powow River begins where the river enters Amesbury from New Hampshire and ends at Lake Gardner.

Currently used as the Town's primary source for raw drinking water, the WTP maintains a raw water intake in the river. A certain level of water over the intake is required to ensure a flow of water into the WTP. This water level is maintained by the Newton Road Weir, which currently impounds water to 36" over the intake. The river is fed from Tuxbury Pond as well as Lake Attitash and Meadowbrook Pond via the Arch Brook culvert which outlets into the small stream between Meadowbrook and the Powow River. The river has a well-defined main channel that meanders considerably from Tuxbury Pond to the Newton Road weir. The watershed mostly lies in New Hampshire, and is fed from a series of impoundments. The dam structure at Trickling Falls in Kingston, New Hampshire is upstream of Tuxbury Pond and controls flow from New Hampshire to Massachusetts. During dry seasons, the flow from Trickling Falls significantly reduces, forcing the Town to rely on water impounded within Amesbury as well as two Town well heads for water supply needs.

The river is also used a recreational resource including boating and fishing. The river has been stocked with trout annually by the Division of Fisheries and Wildlife. Wildlife is characterized by a variety of waterfowl including: Canadian Geese; Great Blue Herons; Osprey; amphibians; reptiles; and fishes as well as several woodland species.

## **5.2 Lower Powow River**

The lower Powow River begins at the base of the Lake Gardner Dam and ends at the confluence with the Merrimack River. This portion of the river travels through downtown Amesbury, past the Mill Yard, under I-495 and then discharges into the Merrimack River. There is one control structure on the lower Powow River which is the Crib Dam. This dam is located within the Mill Yard, just upstream of Market Street, and is used to control the flow of water through the downtown area.

## **5.3 Tuxbury Pond**

Tuxbury Pond has an area of 108 acres, a mean depth of 4.25 feet, and a maximum depth of 8 feet and total volume of 459 acre-feet (*Aquatic Control Technology Report, November 18, 1994*).

Tuxbury Pond is primarily used as an impoundment for drinking water supply. The Town owns and operates the Tuxbury Pond Dam to provide adequate water for the WTP. Potable water demand regularly draws Tuxbury Pond down 30 inches over the course of a normal summer. A 2 foot drawdown will expose approximately 20% of the pond bottom and remove 47% of the total volume of water (*Aquatic Control Technologies*). Tuxbury Pond is used for boating and fishing recreation. Wildlife is abundant in and around the pond.

The land under Tuxbury Pond is privately owned. Work required in the pond watershed and bed, requires permission of the respective owners or immediate access can occur during an emergency.

## **5.4 Lake Attitash**

Lake Attitash has an area of 360 acres, a mean depth of 14 feet, and a maximum depth of 30 feet and a total volume of 5,040 acre-feet (*Lake Attitash Water Quality Study, May 1977-April 1978*).

Lake Attitash is also used as an impoundment for drinking water and is considered a secondary water supply source. The Town currently withdraws water Lake Attitash, through Meadowbrook, and into the Powow River. Currently, the Town attempts to maintain Lake Attitash at its normal pool during the summer months and uses only the

natural releases from the Birches Dam and Arch Brook Culvert as part of the Town water supply. This occurs regularly as the Arch Brook Culvert outlets into the Powow River upstream of the WTP. The Town also lowers Lake Attitash to an elevation of 95.0' between the approximate dates of September 16 and November 30 in the fall for spring flow storage. Lake Attitash has one outlet structure, The Birches Dam, which outlets directly into Meadowbrook Pond. The Birches Dam is used to control the flow of water between Lake Attitash and Meadowbrook.

Lake Attitash is used extensively for recreation including boating, swimming, and fishing. The significant number of existing residences surrounding Lake Attitash limits wildlife habitat in the area. The Back River area and the undeveloped area near Indian Head Park offer extensive wildlife habitat. The lake is a stopover for many migratory birds and has resident ducks, Osprey, and occasional Bald Eagles. It also has an extensive fish population and has a history of being stocked by the State with game fish. Lake Attitash is classified as a "great pond" and is therefore considered property of the Commonwealth of Massachusetts. The Town still has rights to the water within the lake and recreational water use is open to the public via the State boat ramp in Merrimac, Massachusetts.

Lake Attitash lies both in Amesbury and Merrimac Massachusetts. Approximately  $\frac{3}{4}$  of the water acreage lies in Amesbury and approximately  $\frac{2}{3}$  of the shoreline lies in Amesbury.

## **5.5 Meadowbrook Pond**

Meadowbrook Pond has an area of 75 acres, a mean depth of 2 feet, and a maximum depth of 4.5 feet and a total volume is 150 acre-feet (*office records*). Meadowbrook is also used as an impoundment for drinking water supply. Meadowbrook has two (2) water control structures controlling the flow of water from the pond into Tuxbury Pond or directly to the Powow River. The stop logs at the Arch Brook Culvert Outlet Structure are used to control the flow of water out of Meadowbrook Pond and Lake Attitash, into the river. The State Line Dam is used to control the flow of water between Meadowbrook Pond and Tuxbury Pond. Meadowbrook is currently maintained approximately 4 to 6 inches lower than Tuxbury Pond and Lake Attitash.

## **5.6 Lake Gardner**

Lake Gardner encompasses approximately 93 acres within the Town. Powow River feeds the lake from the north and the river continues from the lake discharge at the Lake Gardner Dam. The dam was constructed in 1872 by the Salisbury Mills Corporation.



Many acres of farmland were flooded upon completion of the dam and the eventual full volume storage created the current Lake Gardner. The need for hydro power declined and the dam was sold to the Town of Amesbury in 1964.

In the early 1800's ice was harvested from the lake. Current uses are more recreational and include boating, fishing, and swimming at public and private beaches.

## **5.7 Merrimack River**

The Merrimack River is formed by the confluence of the Pemigewasset and Winnepesaukee Rivers in Franklin, NH. The river flows approximately 128 miles before it discharges to the Atlantic Ocean in Newburyport. The river passing through Amesbury is tidal and has an influence on water elevations in the Lower Powow River up to the Market Square area. The Merrimack River watershed covers an area of approximately 5,010 square miles, making it the fourth largest watershed in New England.

The Merrimack River has significant water elevation changes due to tidal fluctuations and stormwater runoff. High water elevations will only affect property owners along the river and has no influence on the general operation of the Town's watershed. In addition, there are no control mechanisms that the Town could use to manipulate river flow.

# **6.0 WATER CONTROL**

## **6.1 History of Water Control Structures**

The Powow River has had a significant part in the history of Amesbury. The large drop in water elevation through the Market Square area provided the opportunity to harness a source of power and spur mill works, ship building and carriage manufacturing back in the 16<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> centuries. Industry owners (mills) used to manipulate the water between Lake Attitash, Meadowbrook and Tuxbury Pond to provide continuous flow necessary to power the manufacturing facilities. This included the operation and maintenance of dams and spillways. In fact, one of the first hydro powered saw mills in North America were operated in the Upper Mill Yard. Ownership and operation of these structures have since been conveyed to the Town and as such, presents the need for this watershed management plan.

## **6.2 State Line Dam**

The State Line Dam is a 35 foot long earthen embankment dam with a concrete spillway located near the center of the structure. A 50 foot long, 18 feet by 3.5 feet, granite block culvert crossing under Kimball Road connects Meadowbrook and Tuxbury Pond. It

crosses under Kimball Road at the state boarder with New Hampshire. The culvert has an open channel approximately 14 feet wide. Stop logs within the concrete spillway are used to regulate flow and water elevations between the two water bodies. This dam is the link that allows the Town to adjust or maintain Lake Attitash, Meadowbrook Pond, and Tuxbury Pond at approximately the same or varied elevations. The stop logs have maximum and minimum elevations of 98.85 feet and 92.9 feet. The pond water level is typically kept at a normal pool elevation 96.44 feet. Flow through this structure is infrequent throughout the year as Tuxbury Pond is maintained at an approximate normal pool elevation of 96.6 feet.

### **6.3 Newton Road Weir on the Powow River**

The Newton Road Weir, which impounds water for the WTP, is a 193 foot long timber and sheet pile structure. The crest of the sheet pile portion is at elevation 89.6 feet, and the elevation of the wooden portion is 90.5 feet. A 3 foot stop log bay extends to the bottom of the river channel. A temporary repair was completed by the Town in 2004 to reduce the approximate three (3) million gallons per day (MGD) leakage of surface water which passed through a breech in the weir during the summer. This breech was the cause that exacerbated the problems for Tuxbury Pond resulting in longer periods of low water.

### **6.4 Tuxbury Pond Dam**

Tuxbury Pond Dam was completely removed and reconstructed in 2001 and consists of a structure comprised of two major elements; an earthen embankment which comprises the left portion of the dam and a concrete spillway which comprises the right portion of the dam. The dam is approximately 204 feet long, with a maximum structural height of approximately 9 feet. The embankment portion of the dam is approximately 125 feet long with a riprap armored 3H:1V upstream slope. The crest of the embankment has an approximate grass covered width of 30 feet and the downstream 3H:1V slop is grass covered. The spillway portion of the dam consists of a 79 foot long concrete spillway divided into 11 bays with 64 feet of total flow length. The two rightmost bays and six left most bays contain 6 foot aluminum downward operating weir gates set at the normal pool elevation of 96.6 feet. The three remaining bays contain a 6 foot aluminum upward operating sluice gate placed between two, 5 foot bays of timber stop logs. The invert elevation for the upward gate and stop log bays are set at 89.56 feet. The Department of Conservation and Recreation (DCR) classifies the dam as a *"large size class II hazard structure"*.

### **6.5 Birches Dam at Lake Gardner**

The Birches Dam consists of an earthen embankment with a 6.5 foot wide culvert with a 48 inch stop log bay to control flow between Lake Attitash and Meadowbrook. This dam is approximately 60 feet long and has a maximum height of 6.5 feet. The crest of the dam consists of the asphalt roadway surface of Birchmeadow Road, averaging approximately 23 feet in width. The maximum elevation of the stop log bay is 98.88 feet, and a minimum elevation of 90.3 feet.

### **6.6 Arch Brook Outlet Structure and Culvert at Meadowbrook Pond**

The dam at Arch Brook is a 36 inch culvert under Kimball Road, with a 34 inch wide stop log bay controlling the flow out of Meadowbrook. The current maximum elevation of the stop logs is 96.44 feet, and a minimum elevation of 92.3 feet.

### **6.7 Lake Gardner Dam**

The Lake Gardner Dam is a 750 foot long, earthen dam with a granite core and a maximum height of 25 feet. Discharge waters flow over a 78.5 foot long gravity spillway and through a 16 foot wide concrete sluiceway controlled by three adjustable gates. In addition to the overflow spillway and sluiceway, a low level outlet with a 24 inch valve is located on the left side of the sluiceway. The dam was installed in 1872 by the Hamilton Wollen Company. It has been reported that the dam was purchased by the Merrimack Valley Power and Building Company in 1916 and modified to provide power. The structure was privately owned and operated until 1964 when the Town of Amesbury obtained ownership of the dam. The sluiceway and gates have the ability to lower water to elevation 77.40 feet.

The Lake Gardner Dam is used to control the flow of water through Market Square. It also can be used to maintain sufficient stormwater storage volume while providing a water area and depth sufficient for recreational uses.

The Lake Gardner is located just north of High Street and on the southern end of the lake.

### **6.8 Crib Dam**

The Crib Dam is located in the Upper Mill Yard and controls flow downstream of Lake Gardner, on the Lower Powow River. This is a wood pile and board dam with a new slide gate flow control. The dam also has an emergency spillway which allows the release of additional water if necessary.

## 6.9 Summary of Control Structures

The following table provides a summary of controlled water surface elevations at each structure.

STRUCTURE	GATE AND BOARD ELEVATIONS			SPILLWAY CREST
	Max	Normal Pool	Min	
State Line Dam	98.85	96.44	92.90	None
Newton Road Weir	90.30	89.6	86.70	89.6
Tuxbury Pond Dam	100.00	96.56	89.56	96.56
Birches Dam	98.88	96.75	93.00	None
Arch Brook Dam	98.85	96.44	92.30	None
Lake Gardner Dam	94.40	86.40	77.40	86.4
Crib Dam	-	70.71	-	-

## 7.0 TYPICAL OPERATION PROCEDURES

### 7.1 Historical Procedures

The Town's previous practice, prior to the replacement of the Tuxbury Pond Dam, was to utilize the first 30 inch from Tuxbury Pond as a sole source for public water supply. During seasonal flow conditions, Lake Attitash and Meadowbrook were not utilized as a water supply until Tuxbury Pond was lowered to an elevation of 94.25 feet. The previous winter drawdown policy reduced the levels of Lake Attitash and Meadowbrook to elevation 92.75 feet for greater weed and flood control. These operation procedures were discontinued following the promulgation of this plan in 1999.

### 7.2 Current Spring Procedures (March 1 through April 30)

- At this time, Lake Attitash and Meadowbrook bypass Tuxbury Pond and discharge directly to the Powow River through Arch Brook Outlet Structure and Culvert.
- Tuxbury Pond is self regulating during this time and adjusted as necessary to control varying flow conditions.

### **7.3 Current Summer Procedure (May 1 through September 15)**

- Between May 1 and September 15<sup>th</sup>, Lake Attitash, Meadowbrook, and Tuxbury Pond are to be monitored and maintained at approximate normal pool elevations based on varying flow conditions.
- During the summer, water is supplied from Tuxbury Pond.
- The Target pool elevation for Meadowbrook Pond is 96.44 feet (normal pool) during the summer.
- The Target pool elevation for Lake Attitash is 96.75 feet (normal pool) during the summer.
- Natural water supplies are provided to the Town by Lake Attitash and Meadowbrook Pond through the Arch Brook Culvert during the summer as a result of maintaining both ponds at normal pool elevations.

### **7.4 Current Fall Procedures (September 16 through November 30)**

- On or about September 16<sup>th</sup>, the winter drawdown of Meadowbrook Pond and Lake Attitash commences. The drawdown procedures are controlled such that both water bodies are lowered to an elevation of 95.0 feet by approximately November 30<sup>th</sup>. Stop logs at the Arch Brook Culvert (Meadowbrook) and the Birches Dam (Lake Attitash) are removed and the water levels are adjusted slowly to the winter drawdown elevation. Roughly one board is removed (*0.6875' drop per board*) at Arch Brook Dam and the Birches Dam until the target elevation of 95.0 feet is reached, on or before November 30<sup>th</sup>.
- Tuxbury Pond is maintained at normal pool elevation during this timeframe as it is the primary water supply source for the WTP.

### **7.5 Current Winter Procedures (December 1 through February 28)**

- The Target pool elevation of 95.0 feet in Lake Attitash and Meadowbrook Pond is maintained during the winter.
- Tuxbury Pond is maintained at an elevation of 96.6 feet (normal pool) during the winter for water supply.
- Lake Attitash and Meadowbrook Pond continue to discharge directly to the Powow River through the Arch Brook Culvert. This water enters the Powow River above the Newton Road dam. Therefore, Lake Attitash and Meadowbrook Pond are a source of public water supply.

## 7.6 Summary of Target Elevation for Annual Watershed Management

SEASON AND DATES	LAKE ATTITASH	MEADOWBROOK	TUXBURY POND	LAKE GARNER
<b>SPRING</b> Mar 1-Apr 30:	Filling to summer target			
<b>SUMMER</b> May 1-Sept 15:	96.75'	96.44'	96.6'	86.4'
<b>FALL</b> Sep 16-Nov 30:	Lowering to winter target			
<b>WINTER</b> Dec 1-Feb 28:	94.5'	94.5'	96.6'	84.4'

The above procedures apply only when there is sufficient raw water to supply the water treatment plant. When the water surface elevation at Newton Road Dam is below elevation 89.6 feet then these procedures no longer apply and water levels shall be lowered to accommodate this deficit.

## 7.6 Hydraulic Operational Considerations

Lake Attitash, Meadowbrook Pond and Tuxbury Pond are physically and hydraulically linked. During low and moderate flow conditions they can be maintained at an elevation of 96.44 feet. The combined volume in these three lakes to elevation 95.0 feet is roughly equivalent to 231 MG. The design capacity of the WTP is 1.5 MGD (CDM). Assuming no rain, no evaporation and no inflow, these rough figures show withdrawals of water to elevation 95.0 feet in the three lakes could supply water to the WTP for 154 days, following the repair of the Newton Road Weir. Without the repair to the weir, the WTP would require 4.5 MGD (assuming 3 MGD pass by) which would supply water to the Plant for 51 days with the above assumptions. After withdrawals to elevation 95.0 feet, available still is 20 MG of water in Tuxbury Pond and 2.5 feet in Lake Attitash, leaving a total volume of 956 acre-feet of water left in the system. In summary, the WTP has a total supply of 67 days with the existing weir, and 195 days if the weir is repaired or replaced. The town is interested in a policy of maintaining the same elevation for all three lakes to minimize the effect of withdrawals for the WTP on individual lakes. A more gradual rise and fall of water levels in all three bodies of water will result. During low flow conditions when water levels need to be manipulated for water supply

purpose, the drop in elevation throughout the three bodies of water will be gradual and uniform. Water quality concerns need to be taken into account in trying to maintain all water bodies at the same elevation. During different times of the year, more water from Lake Attitash and Meadowbrook Pond enter into the water supply and change the water quality downstream at the inlet to the Water Treatment Plant. This policy currently does not exist but should be pursued at a later date.

### **7.7 Seasonal Management Objectives**

Flow down the Powow River into Amesbury is largely controlled upstream at a series of dams in New Hampshire. The control structures and impoundment facilities in Amesbury were designed to supply water to downtown for Town Amesbury mills. They were created during an era when stream banks were largely undeveloped and lakeshores had few seasonal residences. These structures were not designed to control flooding. High flows during the winter and spring resulting from rainfall and snowmelt require a management policy that allows the Town some measure of additional impoundment in Lake Attitash. Seasonal draw down of the four water bodies also assists with aquatic weed control, another objective of the Town.

Seasonal drawdowns are not anticipated to impact fisheries or wildlife habitat bordering Lake Attitash, Meadowbrook, Lake Gardner and Tuxbury Pond. The winter drawdowns of Lake Attitash and Meadowbrook will be completed prior to brumation of amphibians and reptiles. The water levels will be restored in early spring to maintain breeding habitat. Impacts to habitats will be minimized by early refill of the lakes and high flow impacts reduced by staged, delayed refill to maximize summer pool elevation.

## **8.0 FLOOD OPERATION PROCEDURES**

This section provides general guidance on how to manage flood conditions within the primary waterways of the Town. This is a guide and it's understood that situational modifications will be made as actual conditions occur. The overall objective is to control the surge of water before and during a flood condition by retaining or releasing water without inundating property adjacent to the waterways. The overall intent of this plan is to minimize the destructive effects of flooding and to protect the Town's infrastructure, private property, and natural resources.

In anticipation of heavy precipitation coupled with high groundwater and high surface water, Town officials shall make preparations for best management of surface water

and spillways. The following are the recommended procedures before, during and following a precipitation which is believed to cause concern.

- Prior to the precipitation event, Town officials should pursue the controlled release of water from Lake Gardner, Lake Attitash, Tuxbury Pond, and Meadowbrook Pond. These water bodies should be allowed to drain without dropping below the allowed minimum of 95.0 feet. The intent is to reduce water levels to increase storage capacity but to not jeopardize the drinking water supply.
- During and after the precipitation event, Lake Gardner, Lake Attitash, Tuxbury Pond, and Meadowbrook Pond should be used to contain tributary water while allowing a controlled release of water through the Powow River. The Lake Gardner Dam, Tuxbury Pond Dam, Crib Dam, Arch Brook Outlet and Culvert and Birches Dam must be continuously monitored using existing water elevation gages at each structure. Water levels in Lake Gardner can be adjusted quickly to accommodate high flows tributary to the lake. This lake also has a large storage volume which can be used to minimize high flow through Market Square.
- System operators should make every effort to not allow surface water to exceed the elevations provided in the table blow. These elevations are the 100-year flood elevation based on the Federal Emergency Agency, Flood Insurance Rate Maps.

<b>WATERBODY</b>	<b>MAXIMUM WATER LEVEL</b>
<b>Lake Attitash</b>	98.0-ft
<b>Meadowbrook</b>	98.0-ft
<b>Tuxbury Pond</b>	100-ft
<b>Lake Gardner</b>	90.0-ft

## **9.0 PREVENTIVE MAINTENANCE**

Preventive maintenance includes the annual activities required to preserve all of the Town's lakes, ponds, river and streams. This includes keeping all waterways clear of debris and any other unnatural objects. It also provides standard procedures for protecting the watershed from ecological degradation.



## **9.1 Dam Maintenance**

Dam maintenance is critical to the reliability of the structures and the safety of residents in the area. Annual maintenance shall follow the guidelines provided in Massachusetts regulations 302 CMR 10.00 Dam Safety. This maintenance shall include the control of vegetation and prohibition of tree growth. Trees shall be pulled from the root and mowing shall be performed to control vegetation growth. Regular inspection shall occur to confirm that there's no soil erosion of the dam. Where this occurs, clean gravel shall be placed with soil and seed to promote a vegetative support.

## **9.2 Water Body Maintenance**

This section includes procedures required to maintain a clean and natural waterway system. The Town's surface waters are susceptible to collecting natural and unnatural debris. As part of this Watershed and Waterway Management Plan, the Department of Public Works (and/or their designee), has the authority to proceed with the measures outlined in the following paragraphs.

### Cleaning

All types of debris collect in the Town's lakes, ponds, streams, and rivers. As resources allow, members of the DPW and volunteers will periodically clear the waterways and watersheds of items that are detrimental to the health of the system. Procedures would be followed that minimize any impacts to the environment in order to conduct the clearing of debris.

Maintenance would include the removal of:

- Standing trees where the collapse into a waterway is emanate
- Fallen trees in waterways or a watershed
- Carriages, beverage cans or any other man-made object
- Other natural and un-natural objects with potential to adversely affect the water body

Waterways access to conduct these maintenance efforts are granted under an Order of Conditions provided by the Amesbury Conservation Commission. Vehicles shall only be used when absolutely necessary and limited to facilitate the required maintenance.

### **9.3 Watershed Maintenance**

Watershed management is required to maintain the current condition of the Town's water ways. The Massachusetts Department of Conservation has a management plan for watershed within DCR control. The report titled "Quabbin Reservoir Watershed System: Land Management Plan 2007-2017" provides detail on how to properly maintain a watershed. Section 4 – Watershed Management Goals provides details that shall be used as a guide in maintaining the Town's watersheds. Access to the watershed to conduct these maintenance efforts are granted under the Order of Conditions provided by the Amesbury Conservation Commission. Vehicles shall only be used when absolutely necessary and limited to only facilitate the required maintenance.

## **10.0 CHAIN OF COMMAND**

Authorization to manipulate water structures rests solely with the Amesbury Town Engineer. The following order of command applies, should the Town Engineer not be available:

1. Director of Public Works
2. Water System Superintendent

Responsibility shall shift only after reasonable efforts to contact the responsible party have been made. Notice to the Mayor's Office shall be given, in writing, when any shift in responsibility has occurred.

## **11.0 SUMMARY**

This Watershed and Waterway Management plan allows for the management of all primary waterways by Town staff according to the procedures set forth herein, for the purpose of water supply, high flow control and preservation of the entire system. Any watershed management action that is not incorporated into this document shall require the filing of a Certification of Emergency with either the Amesbury Conservation Commission or the Department of Environmental Protection.



OF PRACTICES FOR PUBLIC WORKS - FLOODING PLANS

CITY OF JAMESBORO

# WATERSHED PLAN WITH NORMAL POOL POND

## ELEVATIONS

PROJECT	DATE	SCALE	DATE	DATE
WATERSHED	1-1-600	PM	R.D.	9/25/2014





O = Project  
LEGEND

130,000 FEET  
(N.H.)

